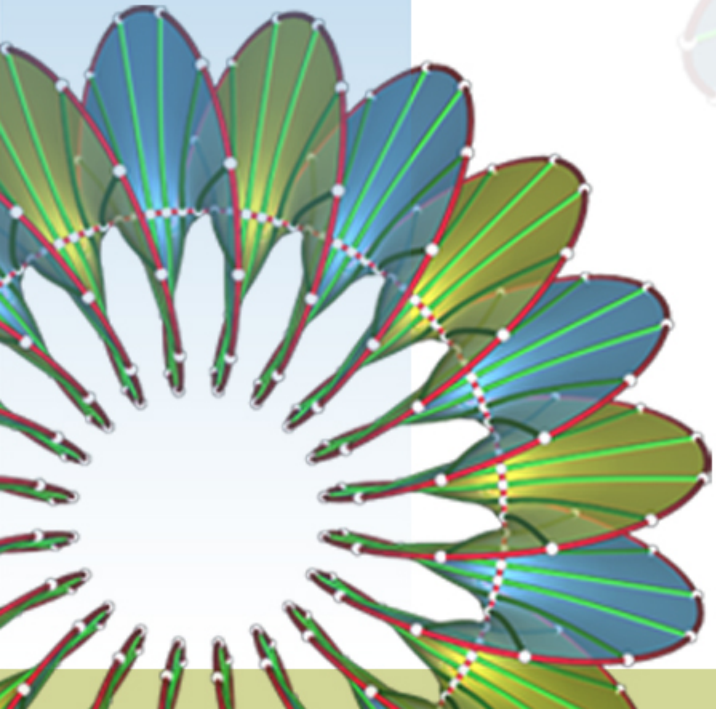

Software Infrastructure for Sustained Innovation (SI^2)
NSF 14-520

WEBINAR
27 January 2014
2:30 PM EST

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NSF CISE/ACI

Join Us

The Division of Advanced Cyberinfrastructure in the Directorate for Computer and Information Science and Engineering at the National Science Foundation has announced a nationwide search for a senior-level researcher to serve as Program Director for software in science and engineering. For more information, visit:

http://www.nsf.gov/pubs/2014/aci14001/aci14001.jsp?org=ACI

Purpose of this webinar

- Orient potential proposers for the SI^2 competition
- Review the program and review criterion, and answer questions
- Improve the quality of proposals

Welcome and thank you!

NSF SI2 Program Officers

Directorate for Biological Sciences
- Division of Biological Infrastructure
  - Peter McCartney

Directorate for Computer & Information Science & Engineering
- Division of Advanced Cyberinfrastructure (formerly "OCI")
  - Dan Katz
  - Rudolf Eigenmann
  - Almadena Chtchelkanova
- Division of Computing and Communication Foundations
  - Sol Greenspan

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- Division of Research on Learning in Formal and Informal Settings
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- Division of Astronomy
  - Nigel Sharp

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- Division of Social and Economic Sciences
  - Cheryl Eavey

Outline

- SI^2 goals and implementation
- Solicitation requirements
- Review criteria

NSF SI^2: a multi-year program

GOALS AND IMPLEMENTATION

SI^2 Program

- NSF program that provides a framework for software development and support to advance NSF research in science and engineering

- Priorities for the program:
  - Sustainable, robust, and reliable software
  - Pathways to include innovation in software
  - Software engineering processes that work for different communities

SI^2 Goals

- Transform innovations in research and education into sustained software resources that are an integral part of cyberinfrastructure

SI^2

  - Balance research with the development of deployable and sustainable software elements

- SI^2 program success will

  - Develop and nurture the multidisciplinary research "processes" necessary for developing software that can enhance the productivity and capability of discipline-specific research
  - Promote a software development ethic that will catalyze software that is manageable and sustainable, and can evolve with the needs of the disciplines and the emergence of new technologies
  - Promulgate and catalyze new approaches in using software to understand natural, human, and engineered systems

SI^2 Program will

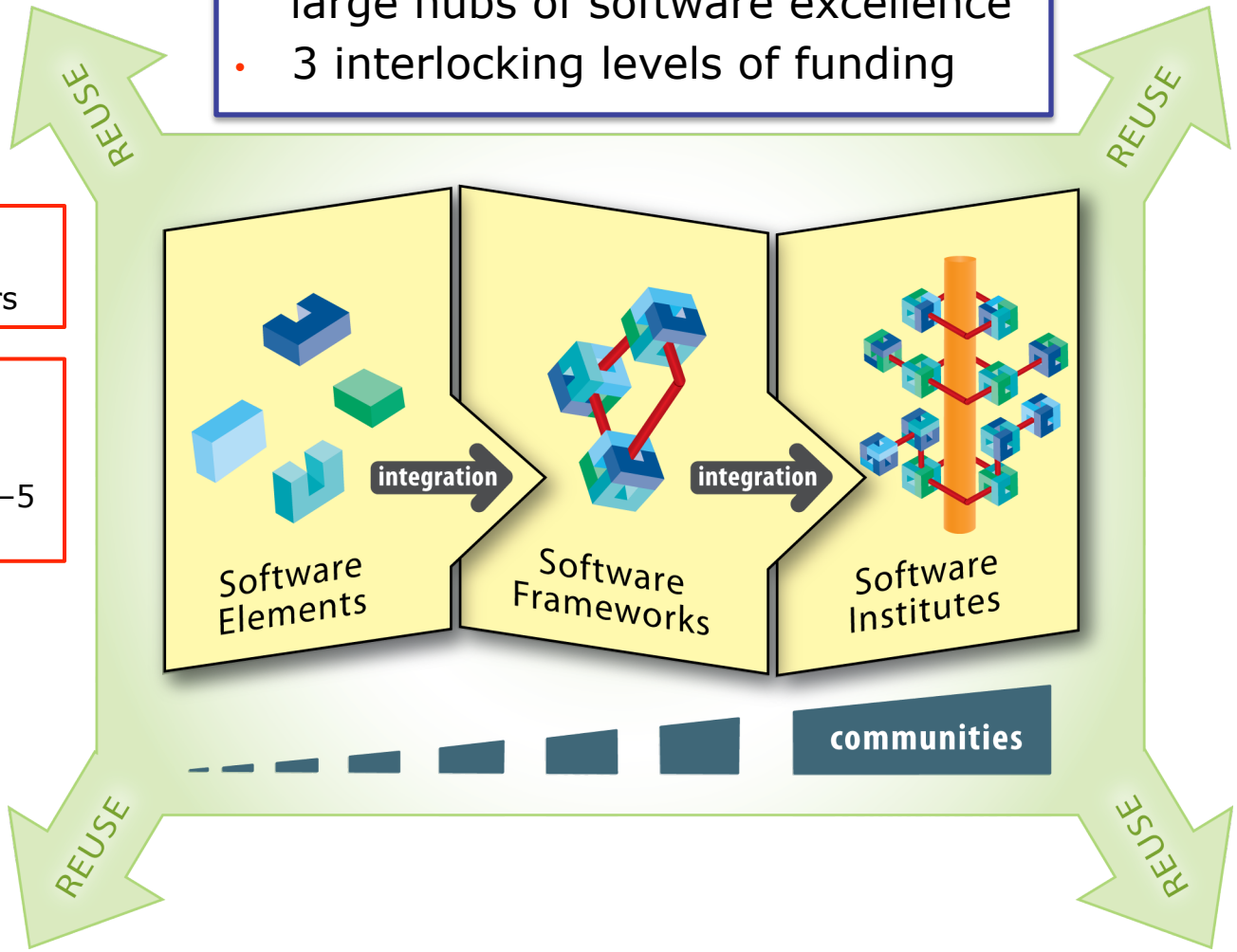
- Identify application areas in science or engineering where software elements are needed and clarify how the use of the proposed software will have a significant impact on science and engineering research;
- Identify one or more specific domain communities that are benefiting from the use of the SI^2 software development and use paradigm;
- Exemplify explicit description of the engineering process used for the design, development, deployment, testing and sustainability of the software;
- Establish a list of tangible metrics, with end user involvement, to be used to measure the success of the software element developed; and
- Provide examples of compelling potential use by broader communities of the software developed under SI^2

SI² Mechanisms

- Create a software ecosystem that scales from individual or small groups of software innovators to large hubs of software excellence
- 3 interlocking levels of funding

Scientific Software Elements (SSE)
1–2 PIs, <$500k, 3 years

Scientific Software Integration (SSI)
For focused groups
$200k - $1M per year, 3–5 years



FY14 SI^2 Competition: SSE & SSI

14-520 Solicitation

http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf14520

Scientific Software Elements (SSE)

- SSE awards target small groups that will create and deploy robust software elements for which there is a demonstrated need, encapsulating innovation in science and engineering.

Scientific Software Integration (SSI)

- SSI awards target larger groups of PIs organized around common research problems as well as common software infrastructure, and will result in a sustainable community software framework.

FY14 SI^2 Competition: SSE & SSI Changes from FY13

- SSI due dates and decision process split from SSE due dates and decision process
- Explicit (open source) license additional review criteria added
- ENG/ECCS now participating

FY14 SI^2 Competition: SSE & SSI Eligibility

- Proposals may only be submitted by:
  - Universities and Colleges
  - Non-profit, non-academic organizations
  - FFRDCs may not receive funds directly from NSF under this solicitation
- Limit on Number of Proposals per PI or Co-PI: 1
  - An individual may participate as Principal Investigator, co-Principal Investigator or other Senior Personnel in at most one full proposal in the pair of SSE and SSI competitions that occurs in a given calendar year
  - In the case of multiple proposals that include the same individual, all but the earliest will be returned without review
- See solicitation for details

Context for meeting SI^2 goals

SOLICITATION REQUIREMENTS

SI^2 Proposals Should

- Identify areas of science and engineering where the software is needed
- Compare the proposed approach to alternative or existing approaches
- Describe the process to design, develop and release the software
- State which license(s) will be used – expectation is a standard open source license
- Provide a project plan with milestones
- Establish tangible metrics
- Discuss the software's potential
- Identify concomitant outreach and education program
- Propose a sustainability plan

Additional Documents

- Data Management Plan & Postdoctoral Trainee Mentoring Plan (if project includes such trainees)
  - Standard NSF requirement
  - SI2 reviewers pay close attention to data management plan, since software is data, and the goal of SI2 is to produce well-used software
- For SSI proposals, Management and Coordination Plan:
  - the specific roles of the PI, co-PIs, other senior personnel and paid consultants at all institutions involved
  - how the project will be managed across institutions and disciplines
  - identification of the specific coordination mechanisms that will enable cross-institution and/or cross-discipline scientific integration
  - pointers to the budget line items that support these management and coordination mechanisms
- List of Project Personnel
  - List of all senior personnel (those with a biosketch in the proposal)
- List of Conflicts
  - For each senior person, all COIs (as defined by NSF in the GPG)
  - Submitted through FastLane/Grants.gov
  - Also as spreadsheet via email to si2@nsf.gov

NSF standard and solicitation-specific criteria

REVIEW CRITERIA

SI² review criteria

Reviewers and panel will address:

- Intellectual Merit,
- Broader Impacts, and
- SI² Additional Review Criteria

in their reviews, panel discussions, and panel summaries

SI^2 review criteria

Please note that, since 14 January 2013, the Intellectual Merit and Broader Impacts elements have new guidance.

When evaluating NSF proposals, reviewers will consider:

- what the proposers want to do
- why they want to do it
- how they plan to do it
- how they will know if they succeed
- what benefits would accrue if the project is successful

These issues apply both to the technical aspects of the proposal (intellectual merit) and the way in which the project may make broader contributions (broader impacts)

SI² SSE & SSI specific criteria

- Does the proposal discuss how the proposed software will fill a recognized need and advance research capability within a significant area (or areas) of science and engineering?
- Does the proposal provide a project plan and timeline, including a proof-of-concept demonstration of any key software element and the steps necessary presented to take the software from prototype to dissemination into the community as reusable software resources?
- Does the proposal state and justify the software license to be used?
- Are tangible metrics described to measure the success of any software that may be developed?
- Does the software engineering and development plan include and/or enable the integration of relevant research activities to ensure the software is responsive to new computing developments?
- To what extent are issues of sustainability, manageability, usability, composability, and interoperability addressed and integrated into the proposed software?
- Does the project plan include user interaction, a community-driven approach, and a timeline of new feature releases? Does it plan to extend the work to additional user communities?

SI²

Not yes/no

On behalf of the National Science Foundation and the SI^2 team

THANK YOU!

These slides, an audio recording, and a script of this webinar will be available at http://www.nsf.gov/events/

Questions? Now, dkatz@nsf.gov, or 703-292-2254.

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